

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 11 MAY 2004



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Applicant's or agent's file reference PAT 851W-90	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA 03/00017	International filing date (day/month/year) 10.01.2003	Priority date (day/month/year) 12.01.2002
International Patent Classification (IPC) or both national classification and IPC B01J19/00		
Applicant SAUDI BASIC INDUSTRIES CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 26.06.2003	Date of completion of this report 07.05.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Nazario, L Telephone No. +49 89 2399-8137 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/00017**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-18 as originally filed

Claims, Numbers

1-18 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/00017**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4-18
	No: Claims	1-3
Inventive step (IS)	Yes: Claims	
	No: Claims	1-18
Industrial applicability (IA)	Yes: Claims	
	No: Claims	1-18

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA03/00017

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: FR-A-1021255
D2: DE-A-19740658
D3: US-A-4474230
D4: EP-A-0715886
D5: US-A-4538423
D6: JP-A-60153936
D7: DE-A-31 39 024
D8: JP-A-7 318272

2. D1-D6 disclose chemical reactors comprising a reaction chamber having an inlet and an outlet, one or more heat pipes which extend beyond the reaction into a condensing chamber and comprise heat exchange surfaces (e.g. fins). The heat pipes are completely closed and contain a heat transfer fluid. The documents disclose different arrangements of the heat pipes within the reactional chamber. (D, page 1, left col. paragraph 1, page 1, right col. paragraph 3 to page 2, right col. paragraph 4, figures; D2, abstract, col. 1, line 56, to col. 3, line 23, claims, figures; D3, abstract, col. 2, lines 32-41, col. 3, line 6 to col. 4, line 12, claims, figures; D4, abstract, col. 3, lines 3-17, col. 3, line 52 to col. 4, line 36, figures; D5, col. 4, line 25 to col. 6, line 5, figure 4; D6, abstract, figures).

Therefore, the subject-matter of claims 1-3 is not novel and does not fulfill the requirements of Article 33(2) PCT.

3. The subject-matter of claims 4-18 is not disclosed in the D1-D6 and therefore the subject-matter of these claims is novel and fulfills the requirements of Article 33(2) PCT.

The subject-matter of claim 4-9 differ from that of D1-D6 in that smaller heat pipe are attached to a principal central heat pipe. Such a design would be an obvious design possibility for the skilled man in the art and does not involve an inventive step. The

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA03/00017

applicant's attention is drawn to the fact that D6 and D7 (abstract, page 11, paragraph 3, figures) show that a plurality of smaller heat pipes may be attached to a central (or principal) tube.

Likewise, the subject-matter of claims 10-18 would be obvious modifications for the skilled man in the art. D8 clearly discloses that fins made from a corrugated plate improve heat exchange efficiency (abstract, figures).

Therefore, the subject-matter of claims 4-18 do not involve an inventive step and do not fulfill the requirements of Article 33(3) PCT.

4. The phrase " ... as they do not depart from the spirit, nature and scope of the claimed and described invention." , in page 18, lines 17-18, implies that the extent of protection may be expanded in some vague and imprecise way. Such a formulation is not allowable (see also PCT Guidelines, CIII, 4.3a).
5. The following remarks should receive attention:
 - 5.1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1-D6 is not mentioned in the description, nor are these documents identified therein.
 - 5.2. The units are not additionally expressed in terms of the units stipulated by Rule 10.1 (a) PCT.